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The Year In The University Of Florida

College Of Agriculture

By Wilmon Newell

When invited to review some of the developments of the year in the College of Agriculture, I thought it would be a good idea to ask some of my associates to give me their estimates of the outstanding things worthy of mention. Accordingly I made this request of Dean Hume, of the Agriculture College, Professor Newins, Director of the School of Forestry, Vice-Director Spencer, of the Agricultural Extension Service, and Mr. Mowry, Assistant Director of the Experiment Station.

Well, I want to tell you that the list of accomplishments they turned over to me was simply amazing.

The entire College of Agriculture has certainly been pushing forward during the year and here are some of the highlights.

First, the School of Forestry. The School of Forestry was established in September 1937 by an Act of the last Legislature, and it is now in its second year of work.

Of particular interest has been the recent acquisition, by purchase, of some 524 acres of land adjoining the original Austin Cary Memorial Forest of 1519 acres, the latter a gift to the University from the Florida Forest and Park Service; so that the University Forest now contains 2083 acres. Improvements in the Forest have steadily continued, largely through the assistance of WPA. Fences, telephone lines, roads and fire lines have been constructed and

preparations are now being made for the construction of quarters in the Forest for the summer Forestry camp, which is participated in by all students in the school of Forestry. In September of this year the faculty of the School of Forestry was strengthened by the addition of a professor of silviculture in the person of Mr. R. H. Westveld.

The outstanding development in the Teaching Division of the College of Agriculture was the appointment, effective September 1, of Dr. H. Harold Hume as Dean, succeeding Major W. L. Floyd, Assistant Dean, who retired from active service at that time. Dr. H. S. Wolfe was added to the faculty as professor of horticulture and head of the horticultural department. Both of these gentlemen have brought to the instructional work much energy and enthusiasm.

The last commencement, on May 30th, saw the largest graduating class to date from the Agricultural College, 42 fine young men receiving their Bachelor degrees on that occasion.

The College has reason, also, to feel proud of the accomplishments of its students. Student J. L. Poucher, who two years ago was adjudged the outstanding Agricultural College freshman in the United States, was, during the past year, president of the national organization of Future Farmers of America. The student livestock judging team, under Dr. W. G.

Kirk, made a fine showing at the Baltimore Livestock Show, achieving first position in the correct placing of animals.

The College continues to attract the support of leading agencies in the agricultural field. The scholarships have been exceedingly helpful to deserving young men.

The forward progress of the College is further evidenced by the fact that the animal husbandry department has been granted authority to give work leading to the Ph. D. degree in Animal Nutrition.

Turning now to the Agricultural Extension Service, First, it should be mentioned that the Agricultural Extension Service in the counties is stronger than ever before, there being at this time 56 county agents and 38 county home demonstration agents. Sixty counties are, through appropriations of county funds, participating in this educational service. The cooperative spirit of the boards of county commissioners in all the principal agricultural counties of Florida has been most gratifying.

Extension activities have included handling, in Florida, the Agricultural Conservation Program of the Agricultural Adjustment Administration; the terracing, in North Florida, of some 752 farms covering 21,594 acres, with the assistance of county agents and district agent J. Lee Smith.

Full cooperation of the Experiment
(Continued on page 23)

Pitting And Decay In Pineapple Oranges

By O. C. BRANTLEY, Associate Pathologist
New York, and J. R. WINSTON, Senior
Horticulturist, Orlando, Div. Fruit
and Vegetable Crops and Diseases

The condition of oranges on arrival at the northern markets may be greatly different from that which one would expect from their appearance during packing in Florida. The differences are difficult for the grower and shipper to understand; and no doubt many of the reports of poor condition telegraphed back from the market are not believed. While it is true that when citrus fruits are bringing a low price on the market there is a tendency on the part of the receivers to be over-critical, yet it is also true that many shipments arrive in poor condition. On receipt of an unfavorable report, the shipper immediately searches for reasons why the shipment was so affected. He undoubtedly realizes that the quality of the fruit at picking time is of importance in determining the condition of the fruit later, and it is perhaps natural for him to believe that if the fruit is apparently in good condition when it leaves the packing house temperature or other factors operating during transit or after arrival upon the market must be to blame for the poor outturns from time to time. He may be less ready to accept the fact that various treatments or operations to which the fruit is subjected in the packing house are similarly important in affecting its condition during marketing.

Selection of Fruit for Test Shipments

To determine the effect of various packinghouse practices and of different transit temperatures on the condition of fruit on arrival at the market, the United States Department of Agriculture in cooperation with several shippers and a ship

transportation company made three shipping tests during December and January of the season 1936-1937, using Pineapple oranges from three groves near Orlando and from two groves in the Indian River district of Florida. In order to conduct these tests satisfactorily it was necessary to follow the fruit carefully from tree to ship's hold, and again from ship side at New York until the fruit had been held at room temperature long enough for it to have passed through the regular market channels had it been in commercial consignments. Because of curtailment of operating funds this experimental work had to be abandoned, but the fruit in the tests completed showed such large amounts of pitting and decay that the preliminary results are given here for the general information of the industry.

Fruit in each of the tests was from

large well-managed groves. Picking of test fruit was supervised by one of the writers and was somewhat more carefully done than is usual commercially. Care was taken to obtain typical and strictly comparable fruit for the test boxes. The fruit was handled in the packing house along with commercial lots and received the same treatments except as noted. The fruit in three of the test lots was dipped in a 7 or 8 percent solution of borax or sodium metaborate immediately on arrival at the packing house; that in the other lots was given antiseptic treatments later during the washing operation.

Some of the test fruit was not washed but was packed immediately following treatment with the antiseptic solution. The remainder of the fruit was allowed to proceed through the washing, polishing and



Figure 2. Extensive pitting at stem end of two "color-added" Pineapple oranges on arrival at New York City.

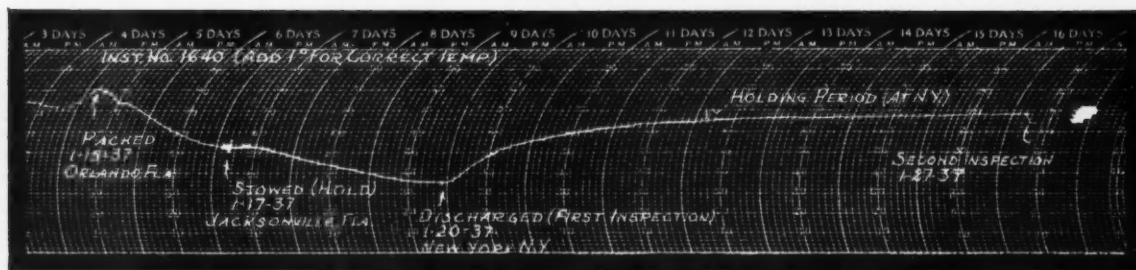


Figure 1. Thermograph record showing temperature from time of packing to end of holding period in center of a box shipped in refrigerated hold.

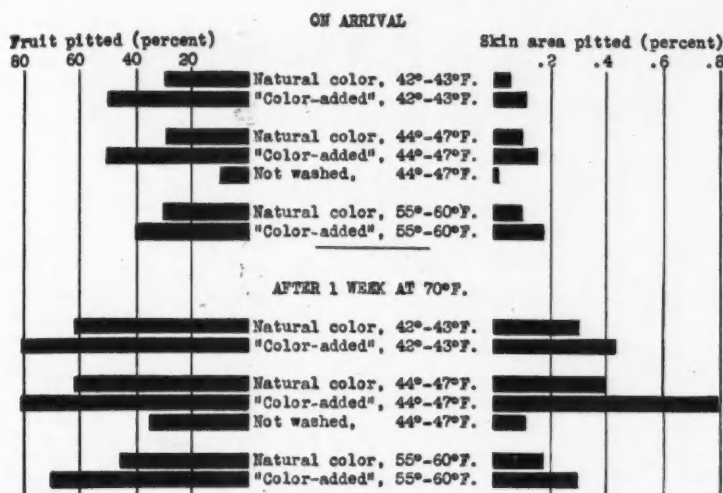


Figure 3. Effect of packing house treatments on pitting in pineapple oranges shipped at various temperatures.

grading processes. Before polishing and grading, part of the fruit was given a "color added" treatment of from 2 to 3½ minutes in a dye solution held between 126° and 129° F. Both "color added" and natural color fruit was dipped in a regularly used wax emulsion before being polished. All test fruit was of 216 or 250 size. It would have been desirable to use a large number of boxes in each test but under the circumstances this was impossible. It was considered more important to obtain complete and detailed records on a limited quantity of fruit than to obtain less complete records on larger commercial consignments.

When each test lot was picked liberal samples were taken to the Orlando laboratory where the solids-acid ratio and other differences in composition were determined. The data obtained showed that some lots of fruit were barely of legal maturity whereas others were fully mature. Thus the tests included fruits representing a good cross section of those shipped commercially during the season.

After being packed the test boxes were handled the same as commercial shipments, being trucked to Jacksonville the evening after they were packed and there held in a cool room until loaded aboard ship. Three different temperatures were available on the ship. Small recording thermometers were packed in the boxes with the fruit carried at each temperature. The average fruit temperatures recorded during transit under these three conditions were: 42-43, 44-47, and 55-60 degrees F. Figure 1 shows a typical Ryan thermometer record covering the entire time from packing to final inspection.

The box in which this record was taken was carried in the regular refrigerated hold of the ship.

At New York the test boxes were removed from the ship, examined on the morning following arrival (this is the time the commercial lots would normally be placed on auction display). Thereafter they were held in a room in which the temperature was controlled at 70° F. Usually about a week elapsed between the time the fruit was picked and the time it was placed in the holding room at New York.

In the first inspection at New York City notes were taken on the condition of one-half of each box; in the final inspection all of the fruit in each box was examined. Notes were taken at each inspection on the percentage of fruit showing pits, the percentage of the skin surface of each fruit involved in the pits and the percentage of fruits decayed by blue-mold and stem-end rots. The term pitting, as used here, refers to collapsed and sunken areas in the skin not accompanied by russetting or wound-cork formation such as occurs at wounds made during enlargement of the fruit on the tree. A photograph showing fruit severely pitted around the stem is presented in figure 2. The presence and size of pits were not recorded unless an aggregate of more than five oil vesicles were involved on the orange.

Effect of packing house treatments on pitting

A comparison of the percentages of pitted fruit and the percentages of skin area affected is shown graphically in figure 3. On arrival at New York City from 11 to 28 per cent of the fruit in the various lots showed pitting. The percentage of skin area involved was quite small, being less than 0.2 per cent in all cases. The most striking result of the first inspection was the difference in amount of pitting between

(Continued on page 17)

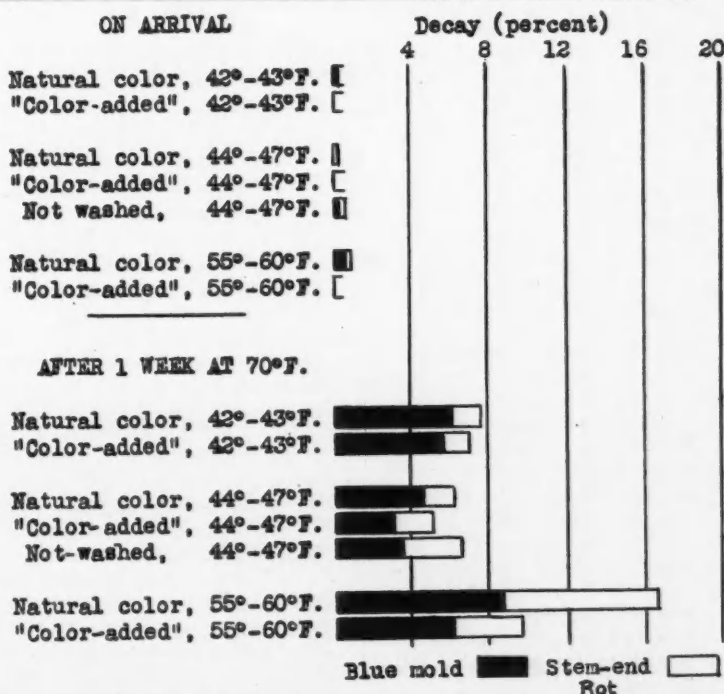


Figure 4. Effect of packing house treatment on decay of pineapple oranges shipped at various temperatures.

The LYONIZER

Department

COMPILED BY THE LYONS FERTILIZER CO.

GOVERNOR CONE DESIGNATES FLORIDA ORANGE WEEK

Governor Cone has designated the week beginning January 2 as "Florida Orange Week", during which time particular stress will be laid upon the urgency of Florida folks increasing their own consumption of oranges.

The Tampa Junior Chamber of Commerce is collaborating by specifying the same week as Jaycee Florida Orange Week and through their efforts the Florida Citrus Commission has agreed to cooperate to the extent of supplying all display materials to applicants all over the state who will agree to put on a special display during that week.

Official announcements of the event will be made between the halves of the big football game to be held in the Orange Bowl at Miami on January 2nd, when thousands of fine Florida oranges will be released from airplanes above the big crowd at the game. Each orange will have its own private parachute and the event promises to be of particular interest to the spectators as well as supplying the newsreel men with a most unusual opportunity to see it raining oranges in Florida.

The undertaking of that special week is well placed in the hands of this enterprising Jaycee organization, of which our own Bob Waterson is a director and very active worker.

For more than five years The Lyonizer has been published each month and sent to a selected list of growers.

The very apparent interest in this little publication has grown to such proportions that we have decided, in order to give it larger distribution, to publish two pages of it each month in The Citrus Industry.

We believe that the interests both of ourselves and of Florida's citrus growers will be served to the best advantage by making this change.

Our Field Men Report:

● L. G. Bruce, of Bartow, who has recently acquired a considerable holding of grove properties over Polk County has just been elected to the city commission of his home town. Mr. Bruce served on the commission for twelve consecutive years up to two years ago when he retired voluntarily, but on the insistence of his friends he was again a candidate and was elected without contest.

● A. J. Lewis, another well know Polk county citrus grower who lives in Bartow who has served as city commissioner in Bartow for six years was re-elected for a new term, without opposition.

● Our representatives report that growers have practically completed their fall application of fertilizer in Polk county. Low fruit prices have tended in numerous instances to keep fertilizer applications down to a minimum, but virtually all growers feel that a heavier application will necessarily be applied during the spring and summer seasons to maintain the condition of their trees.

● One of our field men visited the McDonald citrus properties in Lakeland in company with W. L. Tait, of the International Fruit Co. The McDonald groves have established an enviable reputation this season for fine bearing and superior quality of fruit.

Bill Stockbridge, who is one of the largest independent celery growers on Sarasota muck, as usual has a fine crop, and began shipping around December 20th. He will ship and market his own crop this year. The Gulf Celery Company will do his packing and precooling.

J. Alvin Hardin has just moved in from Indiana with his family to take charge of his celery farm in Sarasota. Mr. Hardin has been growing celery successfully for a number of years, and is now one of Lyons' boosters.

In the Manatee county section most of the celery was severely injured by the heavy rains in early November. We are pleased that one of the best looking celery crops that is now coming along in that section was fertilized by Lyons Fertilizer Company, and sprayed exclusively with Orange Manufacturing Company's materials. Mr. B. Fortis is the grower.

JANUARY SUGGESTIONS FOR GROVE CARE

Prepared By Horticultural Department, Lyons Fertilizer Company

SPRAYING

Watch out for rust mites, particularly on Valencia oranges. They can still turn that bright fruit rusty.

PLANTING

This is a good time to plant young trees and replace missing ones in the bearing grove. Cut trees back to not over fourteen inches. Plant with crown roots **even with** the surface of ground —**not below**. Remove all trash from soil before placing about roots. Spread roots out carefully. Water well and **often**.

BANKING

Non-bearing trees likely to be exposed to severe cold should be banked with soil from which all sticks, grass and other trash have been removed. This will prevent damage from wood lice.

PRUNING

Prune dead wood and water sprouts from all trees not carrying fruit. Treat trees affected with gummosis, foot rot, etc.

GENERAL

Better plan for that irrigation system if you have not already done so. Experience with three drouths in recent years has shown many growers the need of making some provision for water.

Adv.

Idle Fancies

It requires the same technique to hold a husband that it does to catch one.

And that goes double in the matter of wives.

Some people are so suspicious that they don't even believe themselves.

And some so credulous that they believe the promises of the devil or the tip of a race track tout.

Some women even believe that their hubbies attend five lodge meetings in a week.

Know a man who divorced his first wife thirty years ago, and who since has divorced two others, who now contemplates remarrying his first.

Experience having taught him that his first guess was the best.

Men like to think their women folk are modest even when they know they are not.

The person who is always looking for the worst usually finds it.

Most of the mother-in-law jokes are written by men who don't deserve a mother-in-law.

All men are gamblers—particularly those who engage in citrus growing or the publishing business.

The man on the outside can always tell the man on the inside how to "run" his business.

Just look at the advice citrus growers are getting from men who think an onion belongs to the citrus family.

Or the advice which editors receive from men who think the only equipment required for a newspaper is a typewriter and a pair of legs.

Or that which teachers receive from those that think that the three "R's" stand for "Rootin', Rustlin' and Reachin'."

It is easy for the private citizen to tell officials how to act as it is for officials to tell private citizens what they can do.

Adv.

John Parker, our dealer in Arcadia, recently agreed to supply 30 birds for a stag dinner. After hunting for 3 days John had 17 birds, so he had to call on the local butcher for assistance. John claims there is quite a scarcity of birds in DeSoto county, but the writer can hardly accept this excuse.

Mr. W. E. Burquest has the same fine crop of celery he has been having in the past. Mr. Burquest as well as Mr. Hardin is now doing his own shipping and selling. Their fine quality is now in great demand. Lyons has played an important part in these crops.

Fine fruit always commands the top price in any market — it can only be produced by trees in good condition. — Fertilizer keeps trees fit.

Because these Products are Manufactured in Florida for use on Florida Groves

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SPRAY
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**SULPHUR
"SUPERIOR"
WETTABLE**

**For control of citrus
insects and disease**

Manufactured by

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Orlando, Florida

**Lyons Fertilizer
Company**
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*Little Bits
of
FUN***REDUCING**

The woman sitting in the specialist's waiting room was portly.

At a summons from an attendant, she rose and waddled into the specialist's sanctum. The doctor threw up his hands in horror.

"My good woman!" he exclaimed "you are stouter than ever! Have you been following the treatment I prescribed? Are you quite sure that you ate exactly what I ordered?"

"Everything," replied the patient.

"And nothing else?"

"Nothng whatever," she replied, "except, of course, my ordinary meals."

HONESTY

The prospective juror asked the court to be excused.

"I owe a man ten dollars," he explained, "and as he is leaving town today for some years, I want to catch him and pay him the money."

"You may be excused," announced the judge, in a very cold voice, "I don't want anybody on the jury who can lie like you."

MARRIAGE

Mandy married a worthless chap, who even refused to deliver the washing she took in. One day she was talking to a white woman about the shiftless man she had.

"Is he older than you, Mandy?" asked the lady.

"Yassum, dat old no account am twelve years older dan Ah is!"

"Then," sympathized the lady, "it must be a case of May having married December."

"No ma'am, it ain't dat. It am mo' like Labor Day done married to April Fool."

NO CLOTHES TO WEAR

"Why didn't you accept that job at the factory you mentioned the other day?"

"Well, they said I'd have to work in a night shift, and all I had was a pair of pajamas."

The Citrus Industry

with which is merged The Citrus Leaf

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THE MARKETING AGREEMENT

During the past month Florida citrus growers and shippers and representatives of the United States Department of Agriculture have spent much time and devoted a great deal of study to a proposed marketing agreement for Florida's unprecedented citrus crop.

What the result of these deliberations may be, remains to be seen. Practically all growers and most shippers were agreed that some marketing agreement controlling distribution of the record breaking crop was essential to the welfare of the industry. But there was a wide divergence of opinion as to the system of control and as to the extent to which such control should be exercised. Most serious objection to the agreement proposed by the majority of growers was that urged by cash buyers and some cash-on-the-tree sellers who contended that the proposed volume control would operate to put the cash buyers out of business and compel cash-on-the-tree sellers to change their entire method of selling operations.

That a marketing agreement of some kind is needed, practically all are agreed. That such an agreement can now be approved and put into operation in time to save the growers from material loss on the present crop is doubtful. According to the most authentic figures and estimates available, approximately one-third of the Florida grapefruit crop and one-fourth of the orange crop has left the groves, going to Northern markets, to canning plants and into local consumption. Very little of this fruit has brought the grower over twenty cents per box on the tree. (Auction market prices average nineteen cents on the tree.)

By the time an agreement of any kind can be approved and put into operation, more than one-half of the Florida citrus crop will have been marketed—at a loss to the grower. And the blame rests primarily upon the growers themselves—and upon growers' organizations. A marketing agreement covering the present season's operations should have been "signed, sealed and delivered" last summer, ready for operation with the opening of the present shipping season, instead of waiting until the season is half over and the markets demoralized from excessive shipments. Instead of fighting in mid-season over the provisions of this season's agreement, the growers should have been in position to give attention to the needs of next season's marketing requirements.

As the situation stands now, a favorable marketing agreement, if and when promulgated,

may serve to curtail grower losses on late season shipments. A marketing agreement covering the entire shipping season would have put millions of dollars into the pockets of Florida citrus growers.

For the sake of the individual grower, in the interest of the industry as a whole, for the welfare of the entire state of Florida, let us not think that our work is done when we have completed a belated agreement for the present season. Rather, let us get busy on a program of control of next season's crop, making the provisions flexible enough to cover conditions as they may exist at that time. But let's do it in time to have the agreement in effect at the opening of another shipping season.

CARING FOR HIS GROVE

In passing a well-kept citrus grove in the "Ridge" section recently, the writer observed a crew of men at work irrigating the trees—a most unusual procedure in Florida citrus groves at this season of the year.

Having frequent occasion to pass this grove at all seasons of the year, we have noticed that the owner always applies fertilizer at the proper season (and presumably in adequate quantities), is diligent with his spraying when spraying is needed, prunes carefully, always raises a cover-crop and apparently observes all other desirable cultural practices. His grove gives ample evidence that such close attention pays—for it is one of the "show places" of the section.

Despite the present depressed prices for the product of his grove, this owner evidently believes that if a grove is worth having, it is worth the best of care—in good seasons and in bad. Which, it strikes us, would be a mighty good practice for any grove owner to follow.

With nearly two thousand cars of Florida citrus (approximately 800,000 boxes) moving to market each week, to say nothing of the vast additional volume from Texas and California, it doesn't require any great amount of mental acumen to realize that some control of distribution is badly needed.

With an estimated reserve of seventeen billion tons of phosphate and an annual world consumption of eleven million tons, it requires no statistician to see that Florida citrus growers will have ample supplies for quite some time to come, particularly as more than seven billion tons of this reserve supply is in the United States—largely in Florida.

The Jaycees drive to increase the local sale and consumption of Florida citrus fruits, which gets under way on January 2, promises to be of material aid in helping to dispose of this year's mammoth crop.

Florida canners of grapefruit juice are hoping sell 30,000,000 cans of the juice in Great Britain this season, an increase of 25 per cent. over last year's sales. The removal of the 15% duty on canned fruit juices is expected to help.

The Winter Clean-Up Of Citrus Aphids

BY J. R. WATSON
ENTOMOLOGIST, FLORIDA
EXPERIMENT STATION

One of the pests which often sorely trouble citrus trees is the green citrus aphid. Most of the damage which this insect inflicts is done in the spring to the first flush of growth. If the aphids are abundant this flush of growth is seriously interfered with, stunted and the leaves curled. A bud, which should make a branch from a few inches to a foot long with numerous leaves and perhaps blossoms, may be prevented from developing at all. If it does succeed in making some growth the leaves may be tightly curled and very small. These small, stunted and curled leaves not only are incapable of nourishing the plant properly but make safe retreats in which purple scale and other pests multiply.

It is estimated that during the spring of 1924 this aphid did damage to the extent of \$4,000,000. It has never been as bad since as it was during the spring of 1924 and '25, due largely to the unfavorable weather during the winter. During a dry and cold winter there is very little growth on the citrus trees, aphids will be scarce, but let there come a warm, moist winter, causing more or less growth on the young citrus trees and aphids will be able to grow and multiply during the winter and their numbers may become very great and the damage may be serious by the time the main flush of growth comes out in the spring. This aphid must have tender growth on which to feed. It cannot live and reproduce on mature foliage, so the abundance of the aphids and the amount of damage they will do in the spring is determined largely by the weather in the winter, particularly that of December and January and the early part of February.

It is expensive to fight an infestation of aphids once they become numerous. The best insecticide we have ever found is a 3 percent nicotine dust. When put on during a quiet time, i. e., a time when there is no wind, this is very effective in killing aphids, but when aphids are flying about, the trees very promptly become reinfested so that the dusting has to be repeated, making the fighting of aphids at blooming time an expensive procedure.

Prevention is always cheaper than control and this is the reason for our taking up this subject at this time when aphids are scarce in the groves. It should be our aim to keep them scarce. There are two forms of the green citrus aphids; a winged form and a wingless form. Which form will be developed depends chiefly on the food supply. As long as the foliage is young and tender, nine-tenths of the aphids will be of the wingless form, but when the foliage approaches full size and begins to harden up, nine-tenths of the aphids will frequently form wings and fly away. Winged forms will be scarce from now until early spring, so scarce that what few do develop will not be likely to leave the grove in which they are raised. In other words, there will be practically no migration of aphids from one grove to another until well along in the spring, until some of the spring growth begins to harden. This means that practically all the aphids a grower will have at blooming time will have been raised in his own grove during the next two or three months. It makes very little difference what your neighbor does, unless your grove is small and surrounded by other groves. The proper preventive is to destroy all aphids found in the grove during the next two months. At this time of the year when aphids are scarce one is apt to consider a few colonies as of no importance. As far as the damage that they are doing is concerned, they are of no importance. The danger lies in their rapidity of multiplication. This aphid, under favorable weather and food conditions, will begin to produce when only six days old, and their average rate of production for the first couple of weeks of their lives, under favorable conditions, is six young per day. With this extremely short life cycle and large numbers of young, it is easily seen that a very few aphids at this time of the year may produce immense numbers by the end of two or three months.

If you have any doubts on this point, take out your pencil and figure how many off-spring a single aphid could have at the end of three months if it produced six per day

with a generation every week. And remember, they are all females. We have never seen a male on a citrus tree, nor, in the main citrus belt of Florida, on anything else. Of course, as a matter of fact we never do have this maximum reproduction. Aphids, as well as other things, have their enemies, syrphid flies and ladybeetles and fungus disease being among the most important checks on the citrus aphid. But these predators also have their enemies and diseases, so that they can never be depended upon to entirely prevent an outbreak, although they are a great help, especially the Chinese ladybeetle which we have succeeded in establishing in at least three counties of the state. This extremely large beetle eats more aphids per day than a dozen of our native ones and, what is more important, we have not found it to be as highly parasitized by either wasplike parasites or fungus and bacterial diseases as are our native ladybeetles.

The program then for the next two or three months, in aphid control is to destroy every single green citrus aphid seen in the grove. Weather conditions may prevent an outbreak of the aphids next spring, but destruction of the aphids during the winter is an extremely cheap insurance against a possible outbreak, if weather conditions should be favorable for aphids during the winter. Aphids found during the winter are mostly on young trees, and it is the young trees particularly which need attention. At this time of year perhaps the most handy method of fighting aphids is to go through the groves once every week or ten days with a bucket containing some good, strong insecticide, such as nicotine sulphate or a pyrethrum compound. The colonies at this time of year will be mostly out on the ends of branches which can be easily bent over into a bucket. Swish them around once or twice so as to thoroughly wet all aphids. A little soap or other spreader should be put into the bucket with the insecticide (nicotine sulfate) so as to facilitate the kill.

One grower that I know of keeps in his pocket a little sack containing a little nicotine-sulfate-lime dust.

(Continued on page sixteen)

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Calcium Nitrate

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Calcium Nitrate is the ideal application just before blooming time during January and February. Calcium Nitrate provides quick acting Nitrate Nitrogen combined with Water Soluble Calcium — two necessary plant foods for the price of one. Calcium Nitrate promotes vigorous bloom, a heavy set and uniform maturity. Calcium Nitrate improves quality too.

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AT LOWER COSTS
FOLLOW THE TREND TO
HIGH ANALYSIS

ouppally trained field men
servable booklet and infor-

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Florida

abno rease — use COPOFILM, "The Modern
Spreser WHITE BAND WEITABLE SULPHUR.

Extending Hands Across . . . The Seas

"Swaps" with Distant Lands Provide Control for Pests

"Precious cargo aboard. Don't disturb the carton of bugs in the ice box," said the steward to the cook on the fast steamer plying between San Francisco, California, and Sydney, Australia.

Bugs in the ice box, and not to be disturbed! What can be the meaning of all that? The bugs were shipped recently from Florida to Western Australia, making the journey halfway around the world by air mail, fast steamer, and air mail again. They were big green pumpkin bugs, usually called stink bugs by Florida farmers whose fruit and vegetable crops they damage. Their value lay not in the bugs themselves, but in the precious cargo on their backs, for each bug carried from two to five eggs of the tachinid fly, a parasite which largely holds the pumpkin bug in check in Florida.

Two or three years previously a few pumpkin bugs had slipped into Australia, despite the vigilance of quarantine inspectors there. They carried no parasite eggs with them, and there were no tachinid flies in Australia. Unhampered, the big green stink bugs in a few months had multiplied to such an extent that their depredations were a serious threat to the agriculture of Western Australia. Entomologists there sent an S O S call to Florida for some of the parasites. Entomologists of the Florida Agricultural Experiment Station responded and rushed the parasitized bugs with all haste, for it is normally but three weeks from the time the egg is laid until the adult tachinid fly emerges from the back of the pumpkin bug. The bugs shipped to Australia were kept in cold storage while on board steamer to slow up developments of the parasites.

In extending "hands across the seas" in the fight on pests destructive to farm crops the Florida Station has but returned courtesies extended to it by insect control agencies in foreign countries. Australia was the source of assistance in the way of parasites highly valued by the farmers and growers of this state. So the Station gladly shipped "parasitized" bugs to that far away land when it called for them.

Debt to Australia first was incurred

by Florida pest control authorities and growers when they imported the Australian ladybeetle, or *Vedelia*, to save the citrus industry from the scourge of the cottony cushion scale. As early as 1890 or 1891 the latter insect had quietly invaded the groves of the state. Climatic conditions favored its increase and in a very few years it seriously threatened grapefruit and orange growing.

Immune to sprays by reason of the impenetrable outer covering, the cottony cushion scale did tremendous damage to citrus trees. Growers at their wits' ends, came to the Experiment Station for relief. Entomologists decided that a "bug-eat-bug" campaign afforded the only way out. The industrious little ladybugs liked the taste of the scales, and went for them with vigor and evident enjoyment.

Control of the cottony cushion scale by the Australian ladybeetle, making possible production of fruit despite infestations, has been relatively complete and inexpensive. Savings to the citrus growers from the introduction of the parasite have been enormous. Little wonder that grove owners were grateful to Australia, and that the Florida Experiment Station fully shared the feeling.

Later it was ascertained that the *Cryptolaemus* ladybeetle, another importation from Australia, is most efficient in the control of the mealy bug, also a serious citrus pest. So Florida again was placed under obligations to the Australians who have been welcomed, therefore, whether they came seeking natural control of cactus, which plagues them, or parasitized stink bugs.

China contributed to Florida the Chinese ladybeetle, first brought over in 1924, which feasts on aphids and helps in keeping them within bounds. Parasites of the cane borer were obtained from abroad in 1928, but success in acclimating them has been lacking.

Looking across the seas for aid is common practice among plant pest control agencies, and the interchange of advice, information and materials is engaged in regularly. Farmers and growers' especially in Florida, profit in a major way.

Inquiry as to pest parasites in other countries is conducted with economy by the Experiment Station,

through cooperating institutions.

And is extended from the United States Department of Agriculture, which has field men in many parts of the earth.

The Florida Agricultural Experiment Station stands as a sturdy sentinel, signalling afar for help when danger from new pests looms at home.

THE WINTER CLEAN UP OF CITRUS APHIDS

(Continued from page thirteen)

Whenever he sees a colony of aphids he bends the sprout into the bag, closes up the opening with his hand, gives it a shake or two, places the bag back in his pocket and goes about his work. Other growers make it a practice to pinch off and destroy all colonies of aphids that they see at this time of year. Later on, when the aphids become more abundant on the young trees further down the branches where they cannot be bent down into the bucket, spot dusting may be resorted to, using 3% nicotine sulfate-lime dust. If done on a quiet, warm day this will be found very satisfactory.

Whichever method you choose, destroy all colonies of aphids from now until blossoming time in the spring. This is a cheap and effective insurance against a serious outbreak of potentially very destructive pest.

Let us never forget that the cultivation of the earth is the most important labor of man. Unstable is the future of a country which has lost its taste for agriculture. If there is one lesson of history that is unmistakable, it is that national strength lies very near the soil.—Daniel Webster.

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January, 1939

THE CITRUS INDUSTRY

Seventeen

PITTING AND DECAY IN PINEAPPLE ORANGES

(Continued from page 7)

the "color added," the natural color, and the unwashed lots. About twice as much pitting occurred and about twice as much skin area was involved in "color added" fruit as in natural color fruit which was similarly subjected to the various packing house operations except the dyeing. On the other hand, the fruit that received no packing house treatment other than the antiseptic bath on the platform showed less than half as much pitting as did the natural color fruit which went through the various polishing operations and other processes except dyeing to which oranges are customarily subjected.

At the end of a week at 70°F. more than 50 per cent of the natural color fruit and more than 75 per cent of the "color-added" fruit was pitted. Again only about half as much was pitted in the lots that were not washed as in the natural color lots that were washed and polished.

The percentage of skin area involved in the pits showed an even greater advantage for unwashed and natural color fruit. At each inspection the fruit that had not been washed had about one-fourth as large a percentage of its skin affected as the natural color fruit, and about one-sixth as much as the "color-added" fruit.

Effect of temperature on pitting

It had been hoped that some of the fruit could be carried at 32° to 35° F. but this range was not obtainable in transit. Fruit shipped at the lowest temperature available was but a few degrees colder than that shipped at the middle range, which is the usual temperature for refrigerated shipment of Florida oranges. It is not surprising therefore that there was little difference between these two lots in amount of pitting. Slightly larger percentages of skin area were involved in the lots shipped at temperatures of 44-47° F. than in those shipped at temperatures of 42-43° F. On arrival the fruit shipped at 55-60° F. was as badly pitted as that in the two colder lots; but at the second inspection it was considerably less affected both in percentage of fruit pitted and percentage of skin involved.

Decay

The percentage of decay in all lots on arrival, about a week after they were picked, was in line with that commonly found in commercial ship-

(Continued on page 20)

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Tampa and Port Everglades, Florida

Florida Citrus In Cans--

An Important Phase Of The Citrus Industry

By D. E. Timmons
EXTENSION ECONOMIST IN
MARKETING

The canning of citrus fruits is a relatively new industry in Florida, but is also an industry that has grown quite rapidly. A few years ago, canning of citrus was considered an experiment; today, a considerable portion of Florida's citrus fruit is marketed in this manner. It is believed that growers will profit by knowing more about this relatively new industry and how, by this means, citrus fruits have become more widely distributed both seasonally and territorially.

Apparently, because of conditions beyond the control of growers, fresh Florida citrus cannot be marketed advantageously the year round, but by means of cans it is possible for the consumer to obtain these fruits every month of the year, and, too, canned citrus fruits can be transported greater distances and to consumers who cannot get fresh fruit.

To date, grapefruit has constituted the primary citrus fruit that goes into cans. However, there is a considerable upward trend in the quantity of oranges being canned. Tangerines, as yet, are considered only in the experimental stage insofar as canning is concerned. Let us take a minute to give you an idea of the rapid upward trend in the canning of citrus. The canning of grapefruit, which had its beginning during the season of 1921-22, increased from 9 thousand field boxes in that first season to about 1 million boxes by the season of 1928-29, and then, to almost 7 million field boxes in 1936-37. 41.4 percent of the total grapefruit production, during the 1937-38 season was canned. After making allowances for that used within the state, we find that almost 44 percent of the interstate movement of grapefruit from Florida was canned grapefruit. The canning of orange juice for commercial purposes is considered as having its beginning during the 1929-30 season, when 40 thousand cases were packed. Since then the quantity canned has varied from season to season, but the trend has been upward. During the season of 1937-38, approximately 11 1-4 million boxes of Florida oranges were used for canning

purposes. This represents about 5 percent of the entire orange production of the state.

A little more detail as to quantity of grapefruit juice and segments, proportion of sweetened and unsweetened, and size of cans may be of interest. Practically no grapefruit juice had been canned prior to 1928-29 season. During that season, 202 thousand cases of grapefruit segments were canned. Since that time, there has been a gradual increase in the quantity of grapefruit segments canned, reaching a total of 4 million cases in the 1936-37 season. Canned grapefruit juice, though having its beginning almost ten years after canning of segments was initiated, about equalled the total volume of segments canned during the past two seasons, each reaching a total of approximately 4 million cases.

We might digress a moment to say that the major portion of the citrus products canned in Texas is juice, inasmuch as Texas grapefruit is not as well adapted to production of segments as is Florida grapefruit.

We have already mentioned the fact that canned grapefruit can be more widely distributed than fresh fruit. Exports of canned grapefruit are increasing quite rapidly. About 25 percent of our grapefruit segments is exported, most of which goes to the British Isles. However, there is a considerable quantity going to other countries, such as France, Belgium, and India.

Only 5 percent of our grapefruit juice is exported. From 12 to 15 percent of Florida's canned grapefruit is sent to the Pacific Coast by boat. The principal cities to which these shipments are made are San Francisco and Los Angeles, California; Seattle, Washington; Portland, Oregon; and Oakland, California. These Pacific Coast markets received approximately 1 million cases of canned grapefruit products between February and October in 1937.

Here are some figures to show the quantity of grapefruit used by Florida canners and the price they paid growers for it. During the past 5 years, approximately 25 million

boxes of grapefruit have been used by canners, and about half of which was used in production of juice and about half in production of segments. For grapefruit used in canning segments, canners paid an average price during this period of 52.4 cents per box and for fruit used in canning grapefruit juice 45.4 cents per box. These prices are f.o.b. packinghouse or roadside, canners paying the cost of hauling from roadside to canneries and from packinghouse to canneries. These prices include a three cent advertising tax for the 1936-37 and 1937-38 seasons. Packing and hauling to roadside or to packinghouse should be deducted from these prices in getting an estimated tree price for fruit used by canners. It is understood that these prices are average prices only. During some seasons the average price was higher while in others the price was lower. It is true that prices varied during the season also. It is not possible to compare prices paid by canners with those received for fresh fruit, since information on price by grade and size is not available.

Most of the canning of Florida grapefruit is done in December, January, February and March. Less than 10 percent is canned before December 1 and less than 15 percent after April 1; making more than 75 percent of the total canned in Dec., Jan., Feb., and March. As indicated by these figures, most of the canning is done during the period when the largest portion of the crop is ready for market. This does not mean, however, that all citrus canned during these 4 months is sold to consumers during this period. As a matter of fact, a large portion of canned citrus products enters consuming channels during the time of year when Florida ships relatively small quantities of fresh fruit. This assures consumers of a supply of Florida fruits, either fresh or canned, for the entire year.

The Agricultural Extension Service, in cooperation with the canners has prepared a publication on citrus canning in Florida which gives detailed figures on the history of canning in Florida, Florida pro-

duction and quantity used by canners since the 1932-33 season, the percentage going to canners for that period, the trend in canning grapefruit segments and juice, size of containers, and other information. Your county agent has a supply of this publication and you may obtain a copy from him.

Jaycees Ready For Florida Citrus Drive

Describing it as "one of the greatest cooperative moves in the history of the citrus industry," Merrill P. Barber, chairman of the Florida state junior chamber of commerce citrus committee, says that plans for the organization's Florida citrus drive next month were nearing completion.

In a conference here with representatives of the Florida citrus commission, which is putting all its resources behind the drive in cooperation with the Jaycees, Barber checked over plans and reports from most of the 41 junior chambers in the

state, indicating that special citrus committees were preparing for the "big push."

"This drive is intended to aid the citrus industry of the state as a whole, and thus give impetus to business in every section, from Pensacola to Key West, by driving home the importance of the industry to our people," Barber said.

Under the plan, which had its inception in Winter Haven where the junior chamber started the ball rolling by introducing resolutions calling for the formation of the state committee, all kinds of outlets for fruit and juice will be contacted by Jaycees and asked to put up special displays of Florida citrus for the drive which will open on Jan. 2, coincident with the Orange Bowl football game at Miami.

The citrus commission will provide ample display material, including special "Florida Jaycee Citrus drive" posters and streamers, and plans are now being considered for the offering of prizes for the best displays in the state.

Special attention will be paid to the promotion of the express shipment of gift fruit by tourists and winter residents as well as citizens of the state. Low express rates combined with special prices and pack-

aging will give impetus to this movement, Barber said.

Under the plan, members of the special citrus committees in each of the 41 Florida cities having junior chambers of commerce, will call on dealers, hotels, restaurants, drug stores and other outlets offering assistance in arranging displays, ordering material for the displays to be sent direct to the dealer in each instance.

Grower's and shippers organizations will be asked to cooperate by providing the proper kind of fruit in quantities and at prices which will make the drive a success.

"If we help the Florida citrus industry, we have helped everyone in the state, all classes of business and professions, because more money will be diverted into the usual channels of trade," Barber said. "Down here in Florida, where we grow the world's finest citrus, we are inclined to take it as a matter of fact—something that is here simply because the good Lord sent us an abundance of good climate, soil and citrus trees, but the time has now arrived to awaken the people of the state to the value of the industry and to the threats from California, Texas, Arizona, Puerto Rico and other places."

IN THERE FROM BELL TO BELL



TO secure quick action, readily-available plant food is used in citrus top-dressers.

Due to delayed application of the summer fertilizer, the spring top-dresser must frequently continue to supply plant food to the trees and to the developing fruit "from bell to bell." Because of its unusual properties, UREA, a water-soluble organic form of nitrogen, furnishes nitrogen to meet these requirements. It goes to work quickly and keeps working.

See that considerable Urea Nitrogen is used in your spring top-dresser. Where nitrogen only is used as a top-dresser, "URAMON" or a "URAMON"-dolomite mixture will give excellent results.

Consult your fertilizer manufacturer or write us.



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E. I. DU PONT DE NEMOURS & CO., INC., Ammonia Dept., Wilmington, Delaware... Orlando, Florida

PITTING AND DECAY IN PINEAPPLE ORANGES

(Continued from page 17)

ments, none of the lots showing as much as 1 per cent. Figure 4 presents in graphic form the percentages of stem-end and blue mold decays found at each inspection. At the end of 7 days at 70° (about 2 weeks after the fruit was picked) the decay in all lots assumed great importance. The largest per cent of decay, 16.2 per cent, was found in fruit shipped at the highest temperature. This was more than twice that found in any lot from the colder transit conditions.

A smaller percentage of decay was found in "color-added" fruit than in natural color or unwashed fruit shipped at the same temperature. However, this difference was of little significance except in the lots shipped at 55-60 degrees F. where 6.7 percent less decay occurred in "color-added" fruit than in natural color fruit. Fruit that was not washed was as badly decayed as the fruit receiving full washing and polishing treatments.

On arrival blue-mold decay (caused by the fungus *Penicillium*) and stem-end decay (caus-

ed by either of the fungi, *Diplodia* or *Phomopsis*) were found in approximately equal amounts. After the fruit had been held 7 days at 70 degrees F. considerably more blue mold than stem-end decay was found, particularly in the lots at the lower temperatures. The percentage of stem rot increased with increase in transit temperatures.

Discussion

The present tests show that the beneficial effect of low transit temperatures on control of decay lasts throughout a marketing period of 1 week. Even so, the loss particularly from blue-mold rot in all lots was excessive. Great strides have been made during the past few years in decay control. The platform treatment with borax or sodium metaborate has been found very successful for decay control. However, there is need for further experimental work to perfect existing methods of decay control and to develop new and better ones.

Blue-mold rot usually begins at mechanical injuries. In the present tests injuries received by the fruit while passing through the packing house machinery may have been instrumental in causing such high

spoilage. This is borne out to some degree by the larger amount of decay in fruit receiving the complete packing house treatments as compared with that in fruit packed direct from picking crates. The reason for the lesser amounts of decay in "color-added" fruit than in the natural color fruit is not known; it may have been due to an adverse effect, particularly on blue mold spores, of the heat in the dye tank or to the antiseptic applied as a part of the "color-added" treatment.

Our knowledge of the nature and cause of pitting is considerably less than our knowledge of the various decays. It is commonly known that Pineapple oranges may pit while still on the tree, particularly if the fruit is not picked until late in its season. One of the lots from which test boxes were obtained showed 44 percent of the fruits pitted at picking time. In view of this fact, even though pitted fruits were well culled out, it is not surprising that some pitting was found after the fruit arrived on the market. However, fruit from each of the five growers was considerably pitted on arrival, and after 7 days were severely pitted. The areas of skin involved after 7

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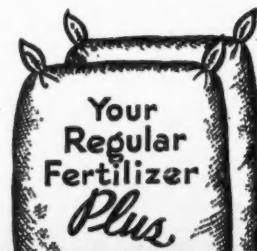
You get more for your money when you use Tee-Cee Brand 65% Manganese Sulphate, because it analyzes high percentages of SULPHATES of COPPER, ZINC, IRON, MAGNESIUM and CALCIUM in water soluble form. These elements when present in other materials are not always in a form readily available to the tree. Tee-Cee Brand 65% Manganese Sulphate gives you a "plus value" that can be measured by the market prices of these extra mineral elements. It is available also in spray form grade.

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days was great enough in some lots to detract markedly from the good appearance of the fruit. This may be seen by reference to figure 3. In lots showing 0.3 percent of the skin surface affected, the average pitted area on each fruit was the size of the cross section of a lead pencil.

In these experiments it was clearly shown that the amount of pitting was greatly increased by packing house operations and particularly by the "color-added" treatment. It is probable that slight mechanical injuries to the skin cells may be caused in the scrubbing, polishing, sizing, and packing operations and that these injuries are the centers of pits appearing later. The "color-added" process gives little additional opportunity for mechanical injury to the fruit, but the hot dye solution may be responsible for injuring the cells. Definite answers to the question of how the packing house practices make the orange more susceptible to pitting must await further investigation; but in the meantime it is imperative that each step in handling the fruit be examined so that the injuries to the fruit can be kept at a minimum.

A brief survey on the New York city market revealed that it is not uncommon for a week to elapse between the time oranges arrive in the city and the time they are consumed. From 2 to 3 days are required to place the fruit in the retail stores. Some of these replenish their supplies of oranges daily, others make their purchases once a week, while the average store takes two deliveries each week. Usually the housewife purchases oranges every 3 or 4 days, buying enough to last her family for that length of time. Consequently, the cost of any wastage which occurs within a week after the fruit arrives on the market falls either on the retailer or the consumer. No small part of what the consumer pays when he buys fruits goes to take care of the risks that the retailer takes in handling produce subject to such deterioration. Further, it must be remembered that the loss in the kitchen may become the most costly of any caused by disease at any stage of production and transportation of the orange. For the same percent of loss by decay, the consumer's loss is far greater than the producer's because the individual unit is so much more costly. That is, the consumer's orange is the producer's orange plus the cost of picking, packing, shipping, refrigerating and trucking as well as sales cost and profits to two or three intermediaries. In this day of increasing em-

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A COMMUNICATION

FLORIDA'S BEST ADVERTISEMENT

Mr. S. L. Frisbie, Editor,
The Citrus Industry,
Bartow, Fla.

Dear Sir:

Our attention has been called to your editorial in the November issue of The Citrus Industry in regard to the movement to encourage hotels, restaurants, drug stores and other places of refreshment to feature Florida citrus juice at five cents per glass.

This is an excellent idea to use up the surplus fruit and at the same time advertise Florida to tourists. Give them all the juice they want at five cents a glass, and supply schools free if possible. Many South Florida residents who returned from the North during October reported that North Florida towns, and some towns in the citrus belt, charged ten cents for a small glass while some drink stands had no citrus juices for sale. This is a poor advertisement for Florida, if our visitors who are now coming by thousands are to be treated the same way.

Another suggestion is to furnish the Florida exhibit at the New York World's Fair with plenty of surplus fruit so they can give a glass of orange or grapefruit juice free to any visitor to the Florida exhibit. This would be worth ten times the amount spent in any other way and would make the Florida exhibit outstanding, as many Northerners have an idea that Florida charges too much for everything. In many cases this is true. Why not surprise the Fair visitors and make them friendly to Florida and thus encourage them to come here.

That's one idea for our Florida Fair exhibit, so let's make it produce results.

Yours for the best interests of Florida.

Dade, Broward and Palm
Beach County Residents.

A very substantial increase in sales of canned grapefruit sections in England is expected as a result of elimination of the 15% duty, a concession contained in the trade agreement recently signed.

phasis on the purchase of fruit by brand, it is important that the housewife's favor be kept by furnishing her fruit that will regularly show a minimum of spoilage after it comes into her hands.

The Citrus Outlook

By R. H. Howard

The annual average per-capita production of the thirteen major fruits increased from about 177 pounds for the five-year period 1919-23 to 206 pounds during the past five years (1934-38). From present indications, it appears that during the next five years a larger total per-capita supply of fruit may be expected, but an increasing proportion of this supply will be comprised of citrus fruits.

A continuation of the upward trend in orange production in the United States is expected during the next five years. Barring unusual tree damage and assuming the continuation of reasonable care of groves, crops of oranges in excess of the record production of nearly 74,000,000 boxes of last season (1937-38) may be expected. Large plantings of trees made between 1920 and 1930 are now coming into fairly heavy production. These will continue to increase in bearing surface during the next five or ten years. Older plantings appear to be maintaining a high rate of production per tree.

Of the 37,800,000 bearing orange trees five years old and over, estimated in the groves of California, Florida, Texas, and Arizona as of 1938, 44 percent are from five to fifteen years old. With this large proportion of bearing trees at an age when production per tree will increase rapidly, and with additional new trees to come into bearing each year, it seems probable that production during the next five seasons (1938-39 to 1942-43) will average 75,000,000 boxes or more. Production of Valencias and other late varieties is expected to increase at a faster rate than that of early and mid-season varieties. In Florida, increased production is expected in both early and late varieties since a large proportion of the bearing trees of each consists of trees under 16 years of age.

Increased production of recent years has been accomplished by relatively low prices to growers. Unfavorable prices for possible further increased production will be offset to some extent by the diversion of more oranges into juice and by-products, and possibly by some increase in exports. But as production of oranges in other countries

is also increasing, disposal of large quantities in foreign markets will be difficult. Then too, unfavorable prices may cause many sub-marginal groves to be neglected and abnormal weather conditions may affect future production.

The trend in world production of oranges and mandarins is definitely upward, with most of the increase during recent years occurring in Brazil, Egypt, Japan, Palestine, Spain, and the United States. Next to the United States, Spain was the largest producer during the 1936-37 season, with a crop of nearly 45,000,000 boxes. Brazil was third in importance, with 36,500,000 boxes.

Bearing acreage of grapefruit has been increasing rapidly during recent years, and the trend of production may continue sharply upward as approximately two-thirds of the bearing grapefruit trees in the United States at the present time have not yet reached the age of full production. Most of the expected increase in production during the next decade will be in the late or seedless varieties of grapefruit which predominate in Texas, California, and Arizona. In 1938 more than 80 percent of the bearing seedless grapefruit trees in the United States had not yet reached full production, while 35 percent of the bearing trees of early or seeded varieties were less than 16 years old, or not in full production. Assuming average growing conditions of the last ten years, and allowing for the potential increase in bearing surface of young trees, the present bearing grapefruit acreage would permit an average production in excess of 35,000,000 boxes during the next five years. This estimate may be modified by neglect and abandonment of groves, for in the absence of a marked increase in purchasing power of consumers, such large crops of grapefruit probably will result in low prices and returns to growers.

The large grapefruit crops of recent seasons have returned prices to growers about equal to the low prices received for smaller crops during the depression of 1931 and 1932. As production has expanded, increasing quantities of grapefruit have been utilized by canning plants. Of the 30,874,000-box crop in 1937-38, 40 percent was used in the can-

ning of juices and segments for commercial outlets, and in addition over 2,200,000 boxes or 7 percent of the crop was purchased by the Federal Surplus Commodities Corporation for relief distribution.

Indications are that the tangerine production will probably increase during the next few years, but at a more moderate rate than for either oranges or grapefruit. Of the 1,766,000 bearing tangerine trees in California, Florida, Texas, and Arizona, approximately 84 percent are 11 years old and over. While many of the trees have not reached full production, it is probable that tangerine groves in Florida have been neglected more than either grapefruit or orange groves due to the unprofitableness of this fruit for several years.

Approximately 90 percent of the bearing tangerine trees five years old and over are located in Florida. Relatively few tangerine trees have been set in groves during the past decade.

According to the 1939 citrus outlook information regarding production and the possible influence it will have upon price, efficient and economical production will be necessary if many growers continue to realize a return on their investment. The old saying that there is more in the man than in the land applies in the production of citrus fruits in Florida. Regardless of the natural fertility of soil, climate, and other favorable factors in the production of citrus, unless utilized to the best advantage by growers through profitable management practices in keeping with economic conditions, little or no returns may be realized during a low price level period.

Florida citrus growers probably face the greatest losses in the production of the crop being marketed at this time since the 1934 freeze and possibly since the 1894-95 freeze, unless market demand and price materially improve. However, the losses encountered during the former periods were for the lack of marketable fruit, while the present crisis is the result of supply and demand. With the uncertainty as to what the future prices of citrus fruit will be, the grower may well give serious thought to possible further economies in production.

THE YEAR IN THE UNIVERSITY OF FLORIDA COLLEGE OF AGRICULTURE

(Continued from page 5)

Station, the United States Department of Agriculture, State Commissioner of Agriculture, and the Works Progress Administration in the development of the sea island cotton industry has continued. A significant activity, also, was the introduction, in cooperation with the United States Department of Agriculture, of cotton bagging to replace bagging of imported jute on some 6,000 bales of sea island cotton.

A vital activity has been the continued operation of club camps and farmers institutes at the three 4-H camps, located in the Choctawhatchee National Forest, Ocala National Forest, and at Cherry Lake in Madison County.

Home demonstration agents have been equally aggressive in their activities. Under their leadership Florida farm women sold \$149,000 worth of home products, grew 7,800 home gardens, planted 486 home orchards, canned 1,237,493 quarts of vegetables and fruits, installed 629 light and water plants, remodeled 2,191 buildings, beautified the surroundings of 5,603 farm homes, and did so many other useful and commendable things that the figures make my head swim. And little wonder that the farm women and girls do things in a big way, for 7,840 farm women and 10,400 rural girls are now enrolled in the demonstration clubs cooperating with the home demonstration agents.

Last, but not least, the Agricultural Experiment Station of the University of Florida - and this is going to be a bit technical, for the Experiment Station Scientists who delve down deeply for the underlying cause of this, that, and the other have a descriptive language of their own - very necessary, of course - but not so easily translated into everyday expressions.

In the field of citrus fruits the leaf symptoms of magnesium deficiency have been identified and this makes it possible to determine when a citrus grove needs applications of magnesium. A bulletin on the subject is now in press.

An important development has been improvement of the spectrographic method of measuring the amount of copper in any desired material in quantities as small as 10 parts per million.

The growers of Irish potatoes who have used, with indifferent success,

THE CITRUS INDUSTRY

the ethylene chlorhydrin treatment for breaking the rest period of the tubers to induce early germination, will be interested in learning that this irregularity is definitely correlated with the over-maturity or under maturity of the potatoes at the time of digging.

This year, for the first time, seed of the wilt resistant Leesburg water-melon, developed by the Experiment Station, has been available to growers.

Observations last spring on tobacco seed beds in some 12 counties showed that blue mold usually started where the same seed beds were used as during the previous year. This indicates a strong probability of the disease carrying through from year to year in these old seed beds. A bulletin giving results of the Experiment Station's investigation of blue mold and how to control it is now in press.

Control of celery pink rot on peat or muck soils has been effected by flooding the land for extended periods at the right time. The same

results can be secured by application of cyanamid to the soil. Either measure destroys the fruiting bodies or seeds from which the pink rot disease develops.

New types of corn, both white and yellow, highly weevil resistant and giving relatively large yields, have been bred by the Experiment Station workers and will shortly be available for use on Florida farms.

Of more than passing interest to dairymen is the discovery, during two years of experimentation, that several clovers, including White Dutch clover, can be grown during the winter season on our lower moist soils by special fertilizer treatment.

A new winter crop for North Florida, known as lupine angustifolius, has been introduced and tested and gives promise of being a valuable soil improving plant.

The only things which will grow without cultivation are weeds and bad habits.

Twenty-three

Uncle Natchel Says...

**DAT'S RIGHT, SUH
NATCHEL SODA
NATCHEL.. YAS SUH!**



CHILEAN NITRATE is the only natural nitrate. It is guaranteed 16% nitrogen. And it also contains, in natural blend, small quantities of other plant food elements.

Many of these elements such as iodine, boron, calcium, zinc, copper, iron, manganese and magnesium, in addition to nitrogen, phosphorus and potassium, are necessary to plant life for normal good health, growth, quality and yield.

Therefore, Natural Chilean Nitrate is agriculturally valuable both as a source of nitrate nitrogen, and to furnish, or build up a reserve of other plant food elements naturally blended with it.

Use Natural Chilean Nitrate—take advantage of its quick-acting nitrogen and its many protective elements. It is well-suited to your crops, your soil and your climate.

**NATURAL
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NITRATE OF SODA**

A CORRECTION

In an article by W. L. Thompson in last month's Citrus Industry, concerning "Some Possible Reasons For The Increase of Purple Scale Infestations," a transposed line changed the sense of a table used in connection with the article. The corrected table appears below:

TABLE II

Purple Scale Infestation on Green and Bronzed Leaves

| Materials Used as a Spray | Av. No. Living Scale per Leaf | |
|-------------------------------|-------------------------------|----------------------------------|
| | Plots with high %green leaves | Plots with high % bronzed leaves |
| Zinc, Copper Spray | 1.88 | .60 |
| Zinc, Copper, Manganese Spray | 1.32 | 1.16 |
| Zinc Copper Spray | 4.40 | 1.32 |
| Zinc, Copper, Manganese Spray | 5.32 | 2.32 |
| No Spray | 1.68 | .76 |
| No Spray | 2.48 | 1.20 |

Appointed



J. R. CRENSHAW

Orlando — Appointment of J. R. Crenshaw, of Orlando, to the position of secretary-traffic manager for the Growers and Shippers League of Florida — filling the vacancy left by the resignation of Thos. D. Guthrie recently was announced recently here by R. B. Woolfolk, league president. Mr. Crenshaw, who is well known in trade circles as one of the outstanding traffic men of the south, is already in charge of the league's executive offices in the Florida bank building in Orlando; hard at work on many of the pressing problems which are confronting fruit and truck crop growers and shippers this season.

Brief Citrus News

By N. F. Lavigne

True Story Magazine carries a full page color advertisement of Florida tangerines on the inside front cover

of the January issue. This magazine also carries a full page story on tangerines headed "It's Tangerine Season", giving several recipes. The article written by Millicent Owen, is terse and interesting and follows the Commission's theme on making tangerines a food to be enjoyed in abundance when in season, like strawberries and peaches. Other color tangerine advertisements appeared in the December 5 issue of Physical Culture Magazine, the December 11 issue of This Week Magazine, the December 16 issue of Life Magazine, the December 21 issue of Liberty, as well as in the December 18 rotogravure sections of the New York Daily News, The Philadelphia Inquirer and the Chicago Tribune.

CLASSIFIED ADS

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1888 by G. H. Gibbons, Waverly, Fla.

ALYCE CLOVER SEED. Ripe and cleaned. Ideal cover and hay crop. Write for information. P. E. Snyder, Box 866, Lakeland, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineout also. De Soto Nurseries, DeSoto City, Fla.

WANTED — Two thousand sweet seedling root stock, lining-out or better. H. M. Sherwood, Fort Myers, Florida.

ROSES—Two year, fieldgrown, ever-blooming varieties. Fall planting best. Free catalog. Tytex Rose Nurseries, Tyler, Texas.

THRIFTY TREES and budwood from record performance Perrine Lemon parents. Persian Lime and other citrus varieties. DeSoto Nurseries, DeSoto City, Fla.

THOUSANDS of Rough Lemon Seedlings, six to twenty inches high. \$1.50 per hundred; \$12.50 per thousand; ten thousand or more at \$10.00 per thousand. Strong field grown plants. INDIAN ROCK NURSERIES, Largo, Florida.

ALYCE CLOVER, the best legume for hay or covercrop. Write for information. Hardin Groves, Box 68, Lakeland, Fla.

CITRUS BUDS AND SEEDLINGS—Jaffa, Pineapple, Hamlin buds on Sour Stock. Sour Orange Seedlings.. R. P. Thornton and H. S. Pollard, Copothorn Nurseries, Box 2880, Tampa, Florida.

CITRUS SEEDLINGS

Cleopatra, Sweet Seedlings, Sour Orange, Rough Lemon, Grapefruit. New low prices. Grand Island Nurseries, Eustis, Fla.

HARDIN'S SPERRYOLA Lemons, a profitable adapted commercial variety for all sections. Hardy, prolific grower and producer. Limited number choice trees. Hardin Nurseries, Box 68, Lakeland, Fla.

SEED—Rough lemon, sour orange, cleopatra. New crop from true parent trees. Also thrifty seedlings. DeSoto Nurseries, DeSoto City, Florida.

NEW COMMERCIAL lemon for Florida, the Perrine; proven. All residents need yard trees, keeping Florida money at home. Booking orders for budded stock for winter delivery. DeSoto Nurseries, DeSoto City, Fla.

BUDDED trees new Florida commercial lemon, proven, thin skinned, juicy, seed immune. Also rough lemon, sour orange and Cleopatra seed and lining-out seedlings. DeSoto Nurseries, DeSoto City, Fla.

AVOCADOS — All desirable varieties. Haden Mangos, Persian Limes, superior budded Loquats. Coral Reef Nurseries Co., Homestead, Florida.

ALYCE CLOVER

Fresh crop, cleaned, and inoculated. Also Crotalaria Spectabilis, Intermedia, Striata. Write for new low prices. Grand Island Nurseries, Eustis, Fla.

CHOICE Rough Lemon Seedlings 6 to 20 inches high, \$10.00 per thousand. Olan Altman, Sebring, Florida.

CROTALARIA SPECTABILIS — Fresh crop, \$15.00 per 100 lbs. f. o. b. Frostproof, Fla. Milton Woodley, Frostproof, Fla.

"MAIL ORDER Operator desires contact with grower of high grade avocado pears. Have interesting proposition for grower of highest quality fruit." F. R. Gardner, P. O. Box 528, Greenville, Pa.

FOR SALE—2000 Riverside No. 10 Grove Orchard Oil Heaters used only two seasons, excellent condition. 70c each, F.O.B. Marianna subject to prior sale. Marianna Fruit Company, Marianna, Fla.

CITRUS NURSERY TREES

All standard varieties and novelties, on Cleopatra and Sour Orange root. Grand Island Nurseries, Eustis, Fla.

MANURE — Stable and Dairy Manure in car lots. Write for prices. P. O. Box 2022, Jacksonville, Fla.

STANDARD varieties of citrus trees including Persian limes and Perrine lemons at reasonable prices. Ward's Nursery, Avon Park, Fla.

The Growers' Own Page

SOME NEEDED CHANGES IN CITRUS MARKETING

Editor Citrus Industry

Dear Sir:

After the enthusiasm of the Lake-land Marketing sessions has died down, it has occurred to me that possibly the whole proceedings may prove futile; because of apparent jealousies, and ambitions, of groups and persons, and the seemingly general demand to override basic economic laws.

Limitation of sales, (and therefore eventually of production) and increase in prices, are the two things, which, when government controlled, will actually wreck, instead of saving industries. Witness the English rubber control in Africa, Brazilian coffee, and the current demoralization of cotton in this country; not to mention other crop control activities of the AAA.

It is fundamental, that the cheapen the sales price of fruit to the con-

This department is devoted to the growers, for their use in giving expression to their views and a discussion of growers' problems. Any grower is welcome to make use of this department for the discussion of topics of interest. The only requirements are that the articles must be on some subject of general interest, must be reasonably short and must be free from personalities. The editor assumes no responsibility for views expressed, nor does publication imply endorsement of the conclusions presented.

sumer, the more will be consumed. This is fine — if only the grower could make money.

The Florida grower has never had competition, until now, like the apple growers have had for the past twenty-five years — district against district. He has been accustomed to too much net profit per box. This has been bad for two reasons; it has encouraged the development of competing districts, and it has discouraged consumer demand. Instead of from \$1.00 to \$2.00 per box net profit, he must plan for the future to be content with, say, 25 cents to 50 cents per box net. Therefore, to

make a living, he must have larger groves and more efficient operation. This same factor has already operated in the apple and peach orchards of the country. Not only will the smaller groves cease to be profitable, but many of the less efficiently operated large groves and marginal groves will pass out of the picture from the commercial standpoint — which will be fine for the rest of the industry.

There are many wrongs in the present system of citrus marketing, mostly chargeable to the buyers, shippers and packers. I will list a few, and give the remedies.

First, and by far the most important, is the present lack of marking the grade on the fruit.

Do you know that when a grocer buys a box of "Golden Girl" oranges from his commission house, (name is fictitious) he does not know whether it is grade 1, 2, or 3. There is no grade mark on the box or on the

(Continued on page 19)

The Citrus Industry
magazine
has demonstrated to
agricultural advertisers
that it covers
the citrus field



REG. IN FLA.

"The modern copper fungicide"

WHAT DO GROWERS SAY ABOUT IT?

"Our fruit sprayed with COPOFILM is free from Scab and Melanose, and is the cleanest, smoothest and most beautiful on our large acreage."

The effectiveness of COPOFILM has been demonstrated. COPOFILM is economical, too.

Write for pamphlet or field service.

Jackson Grain Company
Tampa Florida
Sole Distributors

SUPERIOR

"Greater in quantity or degree of a good quality," is one of the definitions which the well-known Mr. Webster gives of the word, Superior.

SUPERIOR

Fruit worthy of being labelled superior always brings its producers a greater reward in the market than fruit which is lacking in the elements of flavor, texture and appearance of sufficient degree to classify it as being of outstanding quality.

SUPERIOR

Fertilizers in every process of their manufacture are designed for the single purpose of providing trees with every essential of health-building nourishment necessary to the production of a superior quality of fruit, such as the markets demand.

SUPERIOR

Service as maintained by the Superior Fertilizer Company includes the helpful cooperation of a highly competent group of field men who know the requirements of citrus groves and how best to supply those requirements with the maximum of efficiency and economy.

The name SUPERIOR as applied to this company was not the result of an accident—it was selected with the preconceived determination on the part of the founders to make every feature of our service to the growers just what the name implies — SUPERIOR.



SUPERIOR FERTILIZER COMPANY

FACTORY AND OFFICE EAST BROADWAY AT 47th STREET

Phone Y-1316

P. O. Box 1021

TAMPA, FLORIDA